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U. S. DEPARTMENT OF AGRICULTURE,
FOREST SERVICE—Circular No. 35.
GIFFORD PINCHOT, Forester.

FOREST PRESERVATION AND NATIONAL PROSPERITY.

PORTIONS OF ADDRESSES DELIVERED AT THE AMERICAN FOREST CONGRESS, WASHINGTON, JANUARY 2 TO 6, 1905, BY PRESIDENT ROOSEVELT, AMBASSADOR JUSSERAND, SECRETARY WILSON, AND OTHERS.

LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF FORESTRY,
Washington, D. C., June 8, 1905.

SIR: I have the honor to transmit herewith a manuscript entitled "Forest Preservation and National Prosperity," being portions of addresses delivered at the American Forest Congress, held in this city January 2 to 6, 1905, and to recommend its publication as Circular No. 35 of the Forest Service.

Very respectfully,

GIFFORD PINCHOT,
Forester.

Hon. JAMES WILSON,
Secretary of Agriculture.

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FOREST PRESERVATION AND NATIONAL PROSPERITY.

[The American Forest Congress, held in Washington, D. C., January 2–6, 1905, was of a character altogether unique. It brought together from every part of the country eminent representatives of all the great industries directly dependent on our forests, to discuss the importance of forest preservation. Practical methods of safeguarding the broad business interests of the nation, now threatened by wholesale forest destruction, were considered by lumbermen, railroad men, engineers, foresters, and representatives of the mining, grazing, cooperage, and other interests, of the several States, and of the National Government. Passages from a number of the addresses, somewhat condensed in places, are given below.

The opening address, at the public meeting of the congress held at the National Theater on the afternoon of January 5, was delivered by President Roosevelt, and was in part as follows:]

THE FOREST IN THE LIFE OF THE NATION.

THEODORE ROOSEVELT,
President of the United States.

It is a pleasure to greet all of you here this afternoon, but especially the members of the American Forest Congress. You have made by your coming a meeting which is without parallel in the history of forestry. In the old pioneer days the American had but one thought about trees, and that was to cut them down; and it was not until half a century of our national life had passed that any considerable body of American citizens began to live under conditions where the tree ceased to be something to be cleared off the face of the earth. For the first time the great business and forest interests of the nation have joined together, through delegates altogether worthy of the organizations they represent, to consider their individual and their common interests in the forests.

The producers, the manufacturers, and the great common carriers of the nation have long failed to realize their true and vital relation to the great forests of the United States, and the forests and industries both suffered through that failure. The suffering of the industries in such case comes after the destruction of the forests, but it is just as inevitable as that destruction. If the forest is destroyed it is only a question of a relatively short time before the business interests suffer in consequence.

All of you know that there is opportunity in any new country for the development of the type of temporary inhabitant whose idea is to skin the country and go somewhere else. You all know, and especially those of you from the West, the individual whose idea of developing the country is to cut every stick of timber off of it, and then leave a barren desert for the home-maker who comes in after him. That man is a curse and not a blessing to the country. The prop of the country must be the business man who intends so to run his business that it will be profitable for his children after him. That is the type of business that it is worth while to develop.

The time of indifference and misunderstanding is gone by. Your coming is a very great step toward the solution of the forest problem—a problem which can not be settled until it is settled right, and it can not be settled right until the forces which bring that settlement about come not from the Government, not even from the newspapers and from public sentiment in general, but from the active, intelligent, and effective interest of the men to whom the forest is important from a business point of view, because they use it and its products, and whose interest is therefore concrete instead of general and diffuse.

* * * It was only a few years ago that the practical lumberman felt that the forest expert was a man who wished to see the forests preserved as bric-a-brac, and the American business man was not prepared to do much from the bric-a-brac standpoint. Now, I think we have got a working agreement between the forester and the business man whose business is the use of the forest. We have got them to come together with the understanding that they must work for a common end, work to see the forest preserved for use. The great significance of this congress comes from the fact that henceforth the movement for the conservative use of the forest is to come mainly from within, not from without; from the men who are actively interested in the use of the forest in one way or another, even more than from those whose interest is philanthropic and general.

* * * I shall not pretend this afternoon to even describe to you the place of the forest in the life of any nation, and especially its place in the United States. The great industries of agriculture, transportation, mining, grazing, and, of course, lumbering, are each one of them vitally and immediately dependent upon wood, water, or grass from the forest. The manufacturing industries, whether or not wood enters directly into their finished product, are scarcely, if at all, less dependent upon the forest than those whose connection with it is obvious and direct. Wood is an indispensable part of the material structure upon which civilization rests; and it is to be remembered always that the immense increase of the use of iron and substitutes for wood in many structures, while it has meant a relative decrease in the amount of wood used, has been accompanied by an

absolute increase in the amount of wood used. More wood is used than ever before in our history. Thus, the consumption of wood in shipbuilding is far larger than it was before the discovery of the art of building iron ships, because vastly more ships are built. Larger supplies of building lumber are required, directly or indirectly, for use in the construction of the brick and steel and stone structures of great modern cities than were consumed by the comparatively few and comparatively small wooden buildings in the earlier stages of these same cities. It is as sure as anything can be that we will see in the future a steadily increasing demand for wood in our manufacturing industries.

There is one point I want to speak about in addition to the uses of the forest to which I have already alluded. Those of us who have lived on the Great Plains, who are acquainted with the conditions in parts of Oklahoma, Nebraska, Kansas, and the Dakotas, know that wood forms an immensely portentous element in helping the farmer on those plains battle against his worst enemy—wind. The use of forests as windbreaks out on the plains, where the tree does not grow unless man helps it, is of enormous importance.

When wood, dead or alive, is demanded in so many ways, and when this demand will undoubtedly increase, it is a fair question, then, whether the vast demands of the future upon our forests are likely to be met. You are mighty poor Americans if your care for the well-being of this country is limited to hoping that that well-being will last out your own generation. No man here or elsewhere is entitled to call himself a decent citizen if he does not try to do his part toward seeing that our national policies are shaped for the advantage of our children and our children's children. Our country, we have faith to believe, is only at the beginning of its growth. Unless the forests of the United States can be made ready to meet the vast demands which this growth will inevitably bring, commercial disaster, that means disaster to the whole country, is inevitable. If the present rate of forest destruction is allowed to continue, with nothing to offset it, a timber famine in the future is inevitable. Fire, wasteful and destructive forms of lumbering, and the legitimate use, taken together, are destroying our forest resources far more rapidly than they are being replaced. It is difficult to imagine what such a timber famine would mean to our resources. And the period of recovery from the injuries which a timber famine would entail would be measured by the slow growth of the trees themselves. Remember that you can prevent such a timber famine occurring, by wise action taken in time; but once the famine occurs, there is no possible way of hurrying the growth of the trees necessary to relieve it.

* * * Whatever it may be possible for the Government to accomplish, its work must ultimately fail unless your interest and support

give it permanence and power. It is only as the producing and commercial interests of the country come to realize that they need to have trees growing up in the forest not less than they need the product of the trees cut down that we may hope to see the permanent prosperity of both safely secured.

This statement is true not only as to forests in private ownership, but as to the national forests as well. Unless the men from the West believe in forest preservation the western forests can not be preserved. We here at the headquarters of the National Government recognize that absolutely. We believe, we know, that it is essential for the well-being of the people of the States of the Great Plains, the States of the Rockies, the States of the Pacific slope, that the forests shall be preserved, and we know also that our belief will count for nothing unless the people of those States themselves wish to preserve the forests. If they do, we can help materially; we can direct their efforts, but we can not save the forests unless they wish them to be saved.

I ask, with all the intensity that I am capable of, that the men of the West will remember the sharp distinction I have just drawn between the man who skins the land and the man who develops the country. **I am going to work with, and only with, the man who develops the country. I am against the land skinner every time. Our policy is consistent to give to every portion of the public domain its highest possible amount of use, and of course that can be given only through the hearty cooperation of the western people.**

FORESTS AS PUBLIC BENEFACTORS.

His Excellency J. J. JUSSERAND,
The Ambassador of France.

The forest has one singular and providential advantage over most of the earth-produced elements of our industries. When we have exhausted an iron mine, a gold mine, an oil well, a supply of natural gas, when the oil has been carried in immense pipes from Chicago to New York, and from thence to our private lamps, it is finished. We can consume the thing, we can not make it. Not so with the forests. It is in our hands to improve or impair them, to kill them or make them live.

* * * In France our forests,[a] like all the other inhabitants of the land, have their own code of laws. Since the early times several laws have been passed, all of them to fortify and to improve practically the dispositions of the code of 1827. One of them is the law of 1860, which provides that every landowner who possesses mountain slopes is obliged,

[a] The French forests cover an area of 23,517,485 acres, or nearly 18 per cent, of the total land surface. The net annual yield is approximately $2.50 per acre, or, in all, about $58,793,712.

whether he wills or not, to reforest them if denuded. In 1882 a new law, perhaps a little less stringent, but more practical, was enacted. According to this law, which is still in force, the Government has the right to serve an injunction on any owner of mountains who has not reforested them. The owner has the right to refuse, and in that case the Government expends a fair sum of money and plants the trees for the good of the community. The results have been very happy. In every part where these rules have been applied it is noted that the temperature is more equal, that the water supplies from springs have been more regular, and the torrents less destructive.

* * * In the same manner another great mischief was being done along the coast of the ocean. For years and for centuries the sand encroached upon the land. Part of it was becoming a desert, and as the years went on the sand invaded the country more and more; it was like a death powder covering the land. Exactly a century ago we thought a stop should be put to it, and we thought of that great friend of man, the forest, and the forest did not fail us. Trees now cover all that sand country, and it has become one of the most useful in France. And now villages and towns have grown where before there was nothing.

AUBREY WHITE,

Commissioner of Crown Lands, Province of Ontario, Canada.

So far as the Province of Ontario is concerned, we derive our principal revenues from the sales of pine timber, there being no state tax. We do not pay one five-cent piece for state purposes. Our great revenue comes from two sources; one, a grant by the federal government, and the other, the proceeds of the sale of our timber. This last year we derived from timber alone $2,800,000. When we want to dispose of our timber we survey it into blocks, or " berths," as we call them, and invite people to come and bid for them. We sold 1 square mile at our last sale and got $36,500 for it. So we have a very valuable asset and are taking care of it—we are not giving it away.

FORESTRY A NATIONAL NEED.

Hon. JAMES WILSON,

Secretary of Agriculture.

Forestry is not a local question; it is as wide as American jurisdiction. It is not a class question; it affects everybody. It is not limited by latitude or longitude, by State lines or thermal lines, by rivers or mountain ranges, by seas or lakes. Steel has taken the place of wood for fencing to a large extent. It has taken the place of wood for ships to some extent. It is being introduced in house building, and is replacing wood extensively in the making of machin-

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ery and for other purposes. Coal and gas are taking the place of wood as fuel, and cement is taking its place for building. The use of wood, notwithstanding these substitutes, increases every year, and our forests steadily vanish before the axman.

The extension of railroads, the settlement of the public domain, the building of cities, towns, and villages, the use of wood in paper making, and the opening of mines, call for more wood every year. The extreme East, the extreme West, and the Gulf Coast are now sources of commercial supply. The industries of our country will be carried on at greater expense as wood becomes scarcer and its substitutes become dearer. Agriculture, commerce, and mining will greatly miss the cheap supply of wood to which they have been accustomed.

* * * The future requires planting in the uplands, at the sources of all our streams that should never be denuded, to make the hills store water against times of drouth and to modify the flooding of the lowlands. We have to tell the people of the lower Mississippi every few years to raise their levees to hold the floods that exceed themselves, as the forest ceases to hold waters that in previous years were directed into the hills and held back.

Every tree is beautiful, every grove is pleasant, and every forest is grand; the planting and care of trees is exhilarating and a pledge of faith in the future; but these esthetic features, though elevating, are incidental—the people need wood. They have had it in abundance and have been prodigal in its use, as we are too often careless of blessings that seem to have no end. Our history, poetry, and romance are intimately associated with the woods. Our industries have developed more rapidly because we have had plenty of cheap timber. Millions of acres of bare hillsides, that produce nothing profitably, should be growing trees.

* * * I look for excellent results from the deliberations of this congress, for more light upon vexed questions, and for the statement of new and useful points of view. But above all, I hope from our meeting here there will come a more complete awakening to the vastness of our common interest in the forest, a wider understanding of the great problem before us, and a still more active and more earnest spirit of cooperation. Unless you, who represent the business interests of the country, take hold and help, forestry can be nothing but an exotic, a purely Government enterprise, outside our industrial life, and insignificant in its influence upon the life of the nation.

Without forestry, the permanent prosperity of the industries you represent is impossible, because a permanent supply of wood and water can come only from the wise use of the forest, and in no other way, and that supply you must have.

Forestry and irrigation go hand in hand in the agricultural devel-

opment of the West. The West must have water, and that in a sure and permanent supply. Unless we practice forestry in the mountain forests of the West, the expenditure under the national irrigation law will be fruitless, and the wise policy of the Government in the agricultural development of the arid regions will utterly fail. Without forestry, national irrigation will be merely a national mistake. The relation in the arid regions between the area under forest and the area in farms will always be constant. We can maintain the present water supply of the West by the protection of existing forests. In exactly the same way we can increase this supply by the foresting of denuded watersheds. The full development of the irrigation policy requires more than the protection of existing forests—it demands their extension also.

The relation of railroads to the forest is no less vital than that of the lumberman. The development of systems of transportation upon a secure basis depends directly upon the preservation and wise use of the forest. Without a permanent supply of wood and water the business of the railroads will decline, because those industries upon whose production that business mainly depends can not prosper. But the railroads are interested in a still more vital way. As great and increasing consumers of wood for ties, construction timbers, poles, and cars, they are in direct and urgent need of permanent sources of these supplies. The problem directly before the railroads is, therefore, the forest problem in all its parts. Much may be done by the preservative treatment of ties and railroad timbers, which not only prolongs their life, but also leads to the profitable use of wood of inferior kinds and a corresponding decrease in the drain upon the forest and the cost of its product. But, important as this is, it merely mitigates the danger instead of removing it. For their own protection the railroads must see to it that the supply of ties and timbers in the forest itself is renewed and not destroyed.

I am particularly glad that this congress will include a full discussion of National and State forest policy. The forest movement in several States has already resulted in the adoption of definite State forest policies. In many others the time is ripe for useful work because of the existence of a strong sentiment for the best use of the forest. The forest problems in different States can not all be solved in exactly the same way. The methods will in each case have to be worked out on the ground where they will be used. But we have before us here the same opportunity in State forest matters as in other phases of the forest problem, for full discussion of methods and results. Above all we must find the most effective means of working together toward the same great ends.

The vast area of the timberlands of the United States is mainly in your hands. You have it in your power, by putting forestry into

effect upon the lands you own and control, to make the lumber industry permanent, and you will lose nothing by it. If you do not, then the lumber industry will go the way of the buffalo and the placer mines of the Sierra Nevada. But I anticipate no such result. For the fact is that practical forestry is being adopted by American lumbermen. In its results it will surpass the forestry practiced in any other country. The development of practical forestry for the private owner has been more rapid here than in any other country, and I look for a final achievement better than any that has been reached elsewhere.

JAMES J. HILL,

President Great Northern Railway Company.

[Extract from a letter to the President of the Congress.]

I very much regret my inability to be present at the Forest Congress. **The subject is of importance far beyond the general understanding of the public.** The growth of population in the United States has practically covered all the land which can be cultivated with a profit without artificial moisture. **Irrigation and forestry are the two subjects which are to have a greater effect upon the future prosperity of the United States than any other public question, either within or without Congress.**

Hon. JOHN LAMB,

Representative in Congress from Virginia.

* * * For over two hundred years there has been a ceaseless war upon the forest of the South Atlantic States. The early settlers cut it down and burned it up, and their children, with few exceptions, followed their example. Then came the general consumption for rails and wood; the demand for mechanical industry; the destruction for liquidation of farm debts; the sale of cord wood and sawed lumber to Northern markets, till every tree of the original growth in most of the States had been removed. The second growth of old field pine is now receiving the same treatment, with smaller profit to the seller and poorer results to the consumer. Could the farmers of these States be persuaded to adopt the intensive system of farming, and have their poorer lands grow up in timber, they would improve their own condition, and hand down to their children valuable possessions.

The disastrous results of overflows and freshets, caused by the removal of the forests along the banks of the rivers, can not be learned from any statistics. The report made to our committee of agriculture shows a distressing condition, and one that appeals strongly for Federal and State legislation. Many valuable farms have been impaired in value, and some utterly destroyed, by the sand and débris washed down by the overflows. Cities and villages that were not

affected years ago are now often flooded with water 8 to 15 feet deep. All this shows the importance of forests to agriculture, and appeals to the American people to spare the trees, and will in time—not far off—compel the State legislatures, as well as the Federal Government, to take action in the premises.

Hon. JOHN F. LACEY,

Representative in Congress from Iowa.

I was born in the woods of Virginia. I moved to the prairies, and one of the most unpleasant things of my subsequent life was to return to the woods of Virginia and find that the old streams and the holes we used to swim in and where we used to go fishing are now gravelly roads. They are highways as dry, as arid, as one of the deserts of Arizona or New Mexico. Why is it? Because the trees have been cut down and the springs, the children of the forest, dried up. Instead of a slow-running brook digging out holes here and there clear as crystal, we have simply a torrent carrying the pebbles and sand from the hills, and then a desert.

DEMAND FOR BETTER LUMBER TRADE STATISTICS.

GEORGE K. SMITH,

Secretary National Lumber Manufacturers' Association.

Large figures are needed to describe the lumber-manufacturing plants, the amount produced annually, and the amount of standing timber. Thirty-three thousand and thirty-five establishments were in operation in 1900, and produced 35,084,160,000 feet board measure in that year. Ten kinds of timber, counting all hardwoods as one, show a total of 1,240,000,000,000 feet available for lumbering.

These figures are interesting and important, but nowhere do we find the amount of lumber consumed annually and the amount on hand at the beginning of each year. Or, in other words, what proportion of the thirty-five billions was used during the calendar year and what per cent remained on hand. Attempts are made by the twelve lumber manufacturers' associations composing the "National Lumber Manufacturers' Association" to procure these figures, but of the thirty-five billions shown to be produced, less than one-half is accounted for by these twelve associations.

The need for and the importance of exact information as to the total amount of lumber in the hands of the manufacturers at the beginning of each year will eventually draw all lumber producers together, and, instead of depending almost entirely on a census report published once in five years, they will have figures of their own annually on which to base their calculations. Already steps have been taken to secure the names of the 33,000 manufacturers of lumber,

and obtain annual reports from them, covering the three essential points, viz, the amount produced, the amount sent forward to the consumer, and the amount of stock on hand when annual inventories are taken.

* * * The steady growth of all lumber associations having for their object systematic gathering and compiling of figures is the best proof of the importance of statistics. When all manufacturers realize their bearing on the individual operation, and on the group of mills, and on the combined whole, some broad association now organized, or yet to be born, covering the entire industry, will be able to give what every producer is waiting for—correct statistics relative to production, consumption, and visible supply, which are the three factors governing values.

DANGER CONFRONTING PACKERS, SHIPPERS, AND THE COOPERAGE INDUSTRY.

M. C. MOORE,

Secretary National Slack Cooperage Manufacturers' Association.

I come before you as a delegate representing the National Slack Cooperage Manufacturers' Association and the Beer Stock Manufacturers' Association of the United States, both of which organizations represent vast capital invested and an enormous consumption yearly of the best hardwood timber. I am also in close connection with the Tight Barrel Stave Manufacturers' Association, the Eastern Cigar-Box Manufacturers' Association, and other associations having to do with the manufacture of package material.

* * * When we consider that a wooden box is about the most familiar and frequently seen object on the face of the civilized earth, we can begin to appreciate the figure cut by the wooden-box industry alone, in lumber consumption.

* * * When we stop to think how much flour, apples, sugar, meat, fish, truck, salt, cement, lime, whisky, beer, oil, molasses, etc., are produced in the United States, and how largely they are dependent upon the barrel as a package, we begin to see what the consumption of timber—hardwood mainly—mounts up to for barrel packages alone. The butter-tub trade is also an extensive one, and takes a large amount of a very high class of hardwood timber. A great annual production of woodenware in the shape of tubs, pails, firkins, etc., comes in to swell the aggregate in the use of timber by the package-making trade.

* * * The industries which I represent must have timber. They must have a very great amount of it. They must have it steadily available on a strictly commercial basis. Now, what can the princi-

ples of scientific forestry do for these industries in a practical, businesslike way, which will place no hardship upon the manufacturers, but which will still preserve the timber for their use? All are greatly interested in this question and are looking to this congress to furnish at least some advance toward a solution of it.

JOHN A. McCANN,
Editor National Coopers' Journal.

* * * We cooperage people have for years gone at the destruction of at least two of the noblest specimens of the American forest—the white oak and the American elm—and followed them so relentlessly that the ends of both are well in sight, unless the American Forestry Association or the Bureau of Forestry will stay the hand of the stave man, do something to repair his wastefulness, or satisfy his rapacity with other woods.

* * * One of my contemporaries says that "it is the traditional policy of consumers of lumber and timber to ignore the possibility of the exhaustion of the timber supply, and invariably they fail to realize the fact until it has already taken place." That suggestion fits my cooperage friends exactly. Twenty-five years ago elm and oak were as abundant in the Northern States as gum and oak are in the Southern States now; and while that condition exists the campaign looking to conservation of the supply should be entered upon vigorously and determinedly, while the campaign for the reforestation of the denuded lands of the North should also be organized and pressed with earnestness.

* * * Necessity has compelled us to see that beech, maple, and birch will take the place of elm and basswood for slack-cooperage work; and we are also learning that gum will make the best of barrels when handled properly. And I presume there are other timbers growing in our forests that need only intelligent handling to become equally available. Whatsoever the American Forestry Association or the Bureau of Forestry can do to demonstrate this, to prevent waste and destruction by fire and insects, and to renew supplies, will be work well done.

ENORMOUS CONSUMPTION OF TIMBER BY THE RAILROADS.

HOWARD ELLIOTT,
President Northern Pacific Railway.

* * * To have good tracks the railroads must have some form of support under the rails, and the present practice is a wooden tie. In this item alone, based upon the actual requirements for a period of years by one large system, it is estimated that the total annual con-

sumption of ties, for renewals only, by all the railroads of the United States, is at least 100 million, to which add 20 million for additional tracks and yards and for the construction of new railroads, and the total is the equivalent in board measure of more than 4 billion feet. The significance of these figures is more apparent when it is remembered that about 200 ties is the average yield per acre of forest, varying very greatly in different localities; so that to supply this single item necessitates the denudation annually of over one-half million acres of forest. But the cross-tie supply is only one of the forest products required by the railroads. There are bridge timbers, fence posts, telegraph poles, car materials, and building timbers of all kinds, all of which it is estimated will nearly equal in board measure the cross-tie item, so that it is probable that the railroads of the United States for all purposes require annually, under present practices, the entire product of almost one million acres of the forest.

If the American railroads are to continue to be the efficient commercial tool that they now are, to continue the very low average rates and the high scale of wages now in effect, the question of the increased cost of ties and timber is of greater and greater importance to those who pay transportation charges, to wage-earners, and to railroad owners.

Hon. CHARLES F. MANDERSON,

General Solicitor Chicago, Burlington and Quincy Railway Company.

* * * The average cost of all ties now going into trackage of the United States is 50 cents apiece, making an annual expenditure of 45 million dollars, or 450 million dollars every ten years. And this calculation does not include the labor of placing the ties in the track or the expense of local transportation. Nor does it take into account the gradual but inevitable increase in price as the supply lessens, the demand incident to the building of the new lines demanded by the ever-increasing commerce of the country, and the necessary supply of street-car lines, both horse and electric, elevated railways, subways, and mine tracks. The demands of these corporations are enormous and constantly increasing. Add to these requirements the many others caused by the uses heretofore referred to, and some conception can be had of how capacious is the maw of the great transportation lines of the Republic, upon whose successful and steady maintenance all industries depend.

* * * A future timber supply demands not only the preservation by judicious forestry and intelligent lumbering of the store we have, but the planting and husbanding of new trees wherever trees can be induced to grow. To this end there must be the arousing of public sentiment, so that in every State and in the Nation there shall be taught the lesson that will lead to legislation.

* * * As yet no substitute has been devised for wood ties that is either economical or desirable. They maintain the alignment of the railroad, so essential to safety, better than any metal substitute, and give an elasticity to the roadbed most important for the preservation and maintenance of the rolling stock. With metal ties, or a stone base, the rails would be speedily injured, and the heavy Mogul engines used to-day, drawing the heavy trains of large cars needed for the traffic, would pound themselves quickly into decrepitude and uselessness.

J. T. RICHARDS,

Chief Engineer, Maintenance of Way, Pennsylvania Railroad System.

During the past year the Pennsylvania Railroad Company has had the subject of tie supplies considered by a committee of our transportation association. The number of cross-ties in use on the railroads of the United States is estimated to be 620 millions; the number used annually for repairs and for extension of track is estimated to be from 90 to 110 millions. Each year the timber from which these are manufactured is farther from the base of transportation. Many of the former sources of supply have already been entirely exhausted. Our Pennsylvania railroads now look chiefly to inland Virginia, West Virginia, and Kentucky for our white oak ties, and the longleaf yellow pine of the Southern States will soon disappear. Probably another decade may nearly close these sources of supply. The time is now ripe for the railroads to consider the question of what course they are to pursue in the future.

* * * As long as twenty-four or twenty-five years ago, on the Pennsylvania lines west of Pittsburg, attention was given to the subject, and a number of catalpa trees were planted near the right of way of one of its lines, but the results obtained were unsatisfactory. More recently the yellow locust, as a tie timber, has been brought to our attention, and the cultivation of this tree to a limited extent for tie purposes has been undertaken. Within the last two years we have begun the planting of yellow locust trees on an extensive scale on property owned by the company. The total quantity planted to date is 280,530 trees. During the coming year we expect to plant about 800,000 more.

MINING IMPOSSIBLE WITHOUT FORESTS.

T. J. GRIER,

Superintendent Homestake Mining Company.

Forests are important to mining, and benefits accrue to mining from forests, but it is not sufficient to say so and there stop. The forests are an absolute necessity to the mines. Nor is it true to say

that the timber produced by the forests is the only benefit accruing from them. Conservation of moisture by a thrifty growth of trees is to the credit of the forest while alike important and necessary to the mineral industry.

* * * Not many, perhaps, fully appreciate the enormous quantity of timber needed in and about a great mine in order to carry on its operations and protect the lives of its operatives. The hoisting works, metallurgical and other buildings on the surface, which are always in sight, perhaps make the average mind more or less oblivious to the fact that further supplies of the forest product are required with every foot of progress made in penetrating the ground. As the miner's work of taking out the ore advances he surrounds himself with a framework of timber, which is intended to hold in place the sides and roofs of his excavations.

DAVID T. DAY,

Chief of Division of Mining and Mineral Resources, U. S. Geological Survey.

* * * We have no accurate knowledge of the amount of timber used in a year in the mines, but we do know that it requires about a cubic foot for each ton of anthracite, say 70 million cubic feet per year; somewhat less for each ton of bituminous, say 250 million cubic feet yearly. Iron ore needs at least 20 million feet, precious-metal mining needs, say, 75 million cubic feet, or, say, 400 million cubic feet [a] a year for the whole mining industry.

Hon. CHARLES D. WALCOTT,

Director United States Geological Survey.

* * * Abundance of wood is one of the prime necessities for successful mining. There are four chief factors in the mining enterprise—the value of the ore, the cost of production, the cost of transportation, and the cost of reduction; and the sum of the last three must be less than the first or the mine will be closed. Mining, properly understood, is a business in which the profits or losses are the result of the balance of these conditions, not an excavation of treasure whose enormous value renders other considerations insignificant. Now, in the three costs mentioned above, the principal elements are water and wood.

Maj. F. D. FENN,

Supervisor Forest Reserves in Idaho and Montana.

* * * No other industry is more directly and intimately connected with the administration of forest reserves than mining. The preservation of timber and the conservation of the water supply—the two

[a] Equivalent to nearly 5 billion board feet.

great purposes of the forester—are exactly suited to meet the two chief branches of the metalliferous mining industry, lode mining and placer mining. The lode miner must have timber for his underground workings; and without water the placer miner is helpless.

* * * Every successful lode miner is the consumer of enormous quantities of forest products. Such properties as the Homestake mine in South Dakota, the great copper mines of Butte and Anaconda in Montana, or the lead-silver producers of the Coeur d'Alenes in Idaho, require almost incredible amounts of timber for their operation. The first impulse of the miner in the hurry and scurry of the newly discovered mining region is to cut and slash indiscriminately. He is heedless of the damage that may be done to the remaining timber, and he is utterly extravagant in the use of that which costs him nothing and which there is no one to claim or protect. What might be expected ensues. Fires start in the cut-over tracts, spread through the accumulated débris to the adjacent forests, and the country for miles around is devastated. In a relatively few years the mining camp is surrounded by denuded hills and the miners are face to face with a timber famine.

FORESTS AND THE DEVELOPMENT OF ELECTRICAL POWER.

A. L. FELLOWS,

Consulting Engineer, United States Geological Survey.

* * * One of the greatest needs that this country has to-day is a cheaper form of power, so that industries as yet undeveloped may, in their turn, add to the national wealth. Electrical power may be generated in many ways, but in none more practically than by the use of water. We here avail ourselves of one of nature's resources without in any way exhausting her reserve supplies, as is done in the present wasteful use of coal. The development of electrical energy on a commercial basis upon a given stream and with a given fall will depend upon a variety of conditions, and in nearly every one of these conditions the forestation or lack of such upon the headwaters of the streams plays an important part. Those regions that approach most closely to ideal conditions are those which are densely forested, and can therefore act as conservators of the water supply with the least artificial aid.

DEPENDENCE OF IRRIGATION UPON FORESTRY.

GUY E. MITCHELL,

Secretary National Irrigation Association.

* * * In the western half of the United States the destruction of the forests has an intimate bearing upon the capacity of the State to sustain population, for population results from irrigation, irriga-

tion depends upon water supplies, and the water supply is furnished from the melting snows caught and held by the forest clothing the great mountain chains of the Sierras and the Rockies.

What is needed to-day is vastly more strength to the arm of American forestry for the vigorous prosecution of its carefully outlined plan to save what we now possess. The two greatest problems before this country to-day are forestry and irrigation. For can anything be of greater import than the creation of an empire within our midst which will support a population as great as that of the entire country to-day?

F. H. NEWELL,
Chief Engineer, U. S. Reclamation Service.

The Government, through the operation of the reclamation act of June 17, 1902, is building large irrigation works throughout the West. The fund for that purpose now amounts to about 25 million dollars. These works, national in character, are being built as rapidly as possible. The protection of these works, their future use, their stability through all time, are very largely dependent upon the proper treatment of the forests which lie upon the mountains above the reservoirs. In fact there is hardly a project now under consideration whose future success is not closely joined with the questions of the best use and preservation of the forests, and, to a less degree, of the grazing land immediately adjacent. These works are being built to last for all time, and if they are to be preserved in their best condition it can only be after we have solved this question of the protection and best use of the forests.

* * * Take Arizona, for instance. Here the Reclamation Service is building a storage dam at Roosevelt costing probably 3 million dollars. When built it will enable the creation of homes for many thousands of people and render productive a large area now desert. For the protection of the Arizona reservoir a forest reserve must be had above the reservoir, in order to prevent, as far as possible, the washing of soil, which follows upon the destruction of tree growth. In Colorado is the Gunnison tunnel 30,000 feet in length, to take water from the Gunnison River into the Uncompahgre Valley—a broad, fertile, but arid plain. The headwaters of that river must be protected in part by the forests as well as by reservoirs. In Idaho the same is true.

This matter of the development of the West is not a State question, but is interstate. We must build reservoirs in Wyoming; we must conserve forests in Wyoming to benefit the arid plains of Idaho. In western Kansas there is the greatest interest in irrigation, and although there are no forests the rivers that come into Kansas, as the Arkansas, depend partly for the continuity of their flow on the

proper treatment of the woodlands on the mountains in the central part of Colorado. In Montana and Nebraska are similar conditions. In Nevada is under construction one of the largest irrigation works in the world. The integrity of that great system, which will cost at least 3 million, and possibly 5 million dollars when it is completed, will depend largely on the conservation of the forest growth in the State of California.

J. B. LIPPINCOTT,
Supervising Engineer, U. S. Reclamation Service.

* * * A striking example of the output of a barren, treeless drainage basin is shown in the case of Queen Creek, Arizona. This stream discharges only in violent freshets, recurring usually as great flood waves, subsiding almost as rapidly as they arise. During the larger part of the year the channel is almost dry. The area of the drainage basin is 143 square miles.

In contrast with Queen Creek is Cedar Creek, in Washington. The drainage area is the same as that of Queen Creek. It is heavily timbered, and in addition the ground is covered with a heavy growth of ferns and moss. The total annual rainfall in the Cedar Creek basin in 1896 was about eight times that in the Queen Creek basin, yet the maximum flood discharge per second is only 3,600 cubic feet for the former, while the maximum for the latter was 9,000 cubic feet per second. The mean discharge for Queen Creek was 15 cubic feet per second, and for Cedar Creek 1,089 cubic feet per second. These two streams represent extreme types. The radical difference in their character is believed to be largely due to the difference in forest cover.

ARTHUR P. DAVIS,
Assistant Chief Engineer, U. S. Reclamation Service.

* * * Although the tendency of modern construction is to the use of the more permanent materials, less subject than wood to destruction and decay, the requirements of irrigation works are very great for piling and subaqueous structures to which wood is well adapted, and for buildings and the large class of temporary structures required. No satisfactory substitute has yet been found for timber in tunnels, and every structure of concrete requires wooden frames. It is not too much to say that the feasibility of some important irrigation works depends upon the proximity of ample timber supplies.

The development of irrigation will in the future lead to the rapid opening and development of timbered areas which are now merely in their natural state. This fact emphasizes the necessity of placing the forests at once under the rigid scientific supervision of trained Government experts. If left to the manipulation of selfish interests

as in the past, the result will be lavish and wasteful use and probably destruction of the forest.

FORESTS AND THE LIVESTOCK INDUSTRY.

Hon. JAMES WILSON,
Secretary of Agriculture.

The regulation of grazing upon the public forest lands is a forest question, and, like all other national forest questions, its settlement should always be for the best interests of the people most deeply interested. Forest reserves are essential to the permanent productiveness of that portion of the public range which they inclose. The question of grazing has from the beginning been the chief problem in the management of the forest reserves. The principles which control the conservative use of the public range are identical with those which control the conservative use of the public forests. The objects are a constant supply of wood and water on the one hand and of forage on the other. Just as the sawmills must eventually shut down unless forestry is applied to the forest from which the saw logs come, so the horses, the cattle, and the sheep of the West must decrease both in quality and number unless the range lands of the arid region are wisely used. Overgrazing is just as fatal to the livestock industry as destructive logging is to the lumber industry. The highest returns from the forest can be had only through recognizing it as invested capital, capable under wise management of a steady and increasing yield, and the permanent carrying power of the range can be maintained or increased only by the wise regulation of grazing.

E. S. GOSNEY,
President Arizona Woolgrowers' Association.

* * * President Roosevelt, standing in the pine forest on the line of the Grand Canyon of the Colorado a few months ago, said of our Arizona forest reserves: "Use them for grazing, for farming, for lumber, for whatever they are best adapted, but so use them that you will not destroy their usefulness for future generations." And in his heart every man in that audience said "Amen."

* * * There must be closer relations between the stockmen and home builders and the forest officials. Their representations must be frank and open; they must know one another. If there are conflicting interests, the parties must be brought together and no contest settled on an ex parte hearing.

* * * There is no real conflict of interest between the home builder on the irrigated ranch and the home builder in the forest reserve, with his cattle or sheep grazing on the public lands. Whatever destroys the productiveness of the soil, whether too many stock, bad

management, fire, or recklessness in any manner, damages all. The conflicts between cattle and sheep interests are the clashing of individual interests and not of the two industries. If the individuals can be brought together and calmly talk their differences over, 90 per cent of such evils will disappear.

* * * The public lands of the West are rapidly filling with real home builders, and the large ranges outside of the Mexican land grants and private holdings, must be given up to the use of the settlers. We whose stock feed in large pastures and cover large areas of public land must gradually give way to the smaller home builder.

A. F. POTTER,
Bureau of Forestry.

The Government realizes the importance of the livestock industry to the prosperity of the Western Commonwealths, and the fact that a very large proportion of the people are directly dependent upon it for the support of their homes. The great economic value of the forage products of the forest reserves is also realized, and an effort has been made to use this resource in the way which appears to be best for the interests of all concerned. Care has been taken in the preparation and enforcement of grazing regulations to avoid, as far as possible, any unnecessary disturbance of business by sudden changes in the manner of using the grazing lands. An effort has also been made to fit the regulations to the actual needs of the reserves, and to allow every privilege consistent with their proper care and management.

In the settlement of questions concerning the use of products of the reserves, all of the different interests must be recognized and considered. The stockmen must not expect to be allowed to use the grazing land in a way which would be seriously detrimental to the interests of the farmer depending upon the water supply from the reserve for irrigation, or in a way which would destroy the forest growth. The lumbermen must also consider these interests and the future welfare of the country, and be willing to cut and handle the timber in a way which will insure a continued growth of the forest, and the farmer must not expect the Government to entirely stop the grazing of live stock or the cutting of timber, but must be content to have these things done under a proper system of regulation.

* * * The stockman has learned from experience that forest reserve protection of the summer ranges means an improvement in the condition of his stock and an increase in the profits of his business. During the past season, when stock in many range sections suffered severely on account of lack of food and water, those who were fortunate enough to have pasturing privileges in the forest reserves were able to get their stock fat, while many of the outside stock on over-

crowded ranges remained thin in flesh, the result being that the stock pastured on the forest reserves were in better demand and sold for more money than those from the outside ranges.

INTEREST OF THE FEDERATION OF WOMEN'S CLUBS.

Mrs. LYDIA PHILLIPS WILLIAMS,
Federation of Women's Clubs.

I want to extend to you the fraternal greetings of the Federation of Women's Clubs, 800,000 strong, a reserve force which to-day is increasing, and whose interest in forestry is perhaps as great as that in any department of its work. The department of forestry in the federation was created only two years ago, yet at the biennial meeting at St. Louis in May only two departments could show as great an increase in interest. In the two years and a few months since that time 38 federations have formed forestry committees, which are enthusiastically spreading the propaganda for forest reserves and the necessity of irrigation.

LUMBERMEN TURNING TO FORESTRY.

F. E. WEYERHAUESER,
Weyerhaueser Lumber Company.

Forest growth varies greatly in different climates and different varieties of trees in the same climate. Before he can consider forestry the lumberman must know the rate of annual growth and the cost of protecting the forest. This information the forester is able to give him. In other words, the forester tells him how long it will take to produce a merchantable tree and the average product per acre. Knowing these facts, it is comparatively a simple matter to determine whether a given forest can be maintained and yet made to yield satisfactory returns to the owner.

The next obstacle, more important because harder to overcome, is fire. I am frank enough to say that in this matter lumbermen themselves are largely responsible, sometimes even to the extent of fighting reform. But the lumberman is not only culprit but sufferer also, and he must be protected in this loss from fire by the rigid enforcement of proper laws. With a sufficient patrol during dry seasons and reasonable care on the part of those who start fires, this source of awful destruction can certainly be checked, though it can never be entirely eliminated.

The final obstacle is taxes. If anywhere, it is here that lumbermen practicing forestry under present conditions will be checked, for the lumberman more than any other manufacturer is the subject of heavy taxation. This policy of drastic taxation results inevitably in the slashing of the timber and the complete destruction of the forest.

Assuming that the land held for forestry purposes is valuable for timber, the State would far better collect a low annual tax over a long period of years than levy a heavy tax for a short period; and this is obvious when we consider that an important industry is thus maintained and a considerable and constant pay roll secured. Practical forestry ought to be of more interest and importance to lumbermen than to any other class of men. At present lumbermen are ready to consider seriously any proposition which may be made by those who have the conservative use of the forests at heart. Private forestry is practicable, and can be applied profitably under favorable conditions.

J. E. DEFEBAUGH,
Editor American Lumberman.

The early lumberman found it hard work to make a profit when he had an unlimited privilege to cut all the timber in sight. In the three northwestern white-pine States from 1830 to about 1845 a few goods given to the Indians were sufficient to secure all the logs necessary to supply any of the mills of that day. Timber that would run 60 per cent uppers could be secured in exchange for whisky that would run 90 per cent adulteration.

* * * The increase in value of all timber holdings within recent years makes advocacy of forest preservation, as far as merchantable timber is concerned, properly a plea for so managing the forest as to get the greatest amount of commercial product from it at the present time, without impairing any more than necessary its productive capacity for the future. The holder of a timber estate is actuated by exactly the same considerations as the holder of other property—he wishes it to produce more money than he has put in. If he can be convinced that the timber is such that its growth will give him greater returns on his investment than its cutting at the present time, he may be induced to hold it; but he is not likely to let his forest stand solely for the benefit of posterity.

* * * That there has been a change of heart within recent years on the part of American lumbermen toward the forestry idea there can be no doubt. If you should ask me to what I ascribe this sentiment, I would say that the most important step forward was made by the disciples of forestry when they ceased to preach the doctrine of indirect and deferred benefits and began to demonstrate that direct benefits could be made to result from forestry as a science and as a practice. Proper forestry regulations and successful reforestation can never be brought about but by a demonstration of direct results. The great and vital question that appeals to the American lumberman is, How can I cut my timber now and at the same time grow a new timber crop for future supply?

N. W. McLEOD,
President National Lumber Manufacturers' Association.

That forestry is practicable upon large timber holdings, either in private or governmental ownership, is unquestioned by all who have given the matter careful thought. Lumbermen who have studied the timber situation realize that in the future, as in the past, the largest returns will not be obtained from their manufacturing plants only. The great fortunes that have been made in the lumber business have been acquired by the owners of large bodies of timber, and this condition will continue. Consumption is annually increasing, not only from the increase in population, but from a material increase in per capita consumption as well. On the other hand, the supply is annually decreasing. If this be true, all Government timber lands should be withdrawn from sale or entry and placed under conservative management—all mature timber being for sale, provided proper protection is given the young timber. In this way at least a partial supply of timber for future generations can be perpetuated.

AN EXAMPLE FROM THE SOUTH.

JOHN L. KAUL,
President The Kaul Lumber Company.

My acquaintance with the southern pine belt has extended over a period of seventeen years. During that time I have constantly observed the deplorable effect upon the forests of lumbering without regard to the future. My experience with the actual application of forestry to longleaf pine lands, however, has been limited to the tracts in which I am particularly interested. These lands are located in central Alabama, and comprise mainly a forest of pure longleaf pine.

* * * The company had lumbered about 25,000 acres in a county adjoining that in which a portion of its present holdings are located, and where conditions are very similar. These cut-over lands had no value for agriculture, and were without satisfactory market value for other purposes. Their best use is for the growing of timber. A large amount of small timber was left standing after lumbering, because it did not pay to handle it. As a result, however, of ordinary methods of logging the timber thus left was not sufficient in amount nor in a condition to promise another cut within a reasonable time and was an absolute waste.

* * * Actual measurement of the forest on 5 per cent of the lands developed the fact that by curtailing the present cut by less than 20 per cent, the company could, after twenty years, again obtain an amount equal to 45 per cent of the present cut. This, at the present

value of stumpage, figuring at compound interest, is a 2 per cent investment; but assuming a rise in stumpage value to $5, it is a 6 per cent investment. Should the value of stumpage reach $10 per thousand, which we confidently believe will be the case, the value of the timber in twenty years' time will represent a return of 10 per cent.

* * * Up to a comparatively recent date the value of pine stumpage in the South was exceedingly low; means of transportation to market were unsatisfactory; the market itself was restricted and uncertain, and competition with northern pine was keen. Of late years, however, the development of southern timberlands has been phenomenal. The growing scarcity of longleaf pine and the steadily increasing demand for it render certain a further rise in its stumpage value. Many lumbermen who acquired stumpage at 50 cents per thousand now credit it in their operations with $2.50 to $3.50, and believe that in twenty years it will have a value of at least $10 per thousand. This probable rise in the value of stumpage is the obvious reason for the existence of companies which hold large timber tracts but do not operate them.

* * * I am free to confess that I turned to forestry with some doubts. I was not entirely sure that its policy, admirable in the abstract, concerns itself sufficiently with business considerations to be of real use to the actual operator. But in taking up, on our own ground, the forest problems which confronted us, the Bureau of Forestry has demonstrated, on our tract at least, the eminently practical character of its work.

THE NEED OF THE FAR NORTHWEST.

GEORGE H. EMERSON,
Vice-President Northwestern Lumber Company.

* * * The song of the ax, the saw, and the hammer is sweet to the ears of our people, for they sing of industry, prosperity, and happy homes. But is there no other note in the song? Do these people ever think of the centuries their crop has been growing? Does it never occur to them that they are the trustees of an heritage for future generations? They are leaving nearly half of the crop in the woods to be burned, and in burning to destroy more; and for the half they are marketing they are receiving no proper equivalent. They are taking to themselves the whole of the heritage intrusted to them, and in return are not even scattering a few seeds for the benefit of their children.

They can only be reached, and these grave errors corrected, by making other methods to their pecuniary interest. Teach them,

therefore, the value of their timber; show them ways of turning their waste to profit; send to them pulp mills, chemical works, and tanning-extract plants; help them to show the transcontinental railroads the short-sighted policy they are pursuing; build for them a double-track road and give to them lower freight rates, and from that now wasted they will furnish ties for the North, boxes for the Middle West, cheaper lumber for your homes.

A FORESTER'S POINT OF VIEW.

C. A. SCHENCK,
Forester to the Biltmore Estate.

* * * I am a lumberman, and as a lumberman I cut trees. At the same time I am a forester, and as a forester I raise trees. We frequently are of the opinion that these little trees, the second growth, are really the best money-makers. I think we might as well change our minds. Stumpage prices are increasing very rapidly in this country; the big tree is the best money-maker. In 1895 and 1896 I sold many a fine white oak at 50 cents per thousand board feet; I wish I could replace them. I would gladly put them back into the woods at $4 per thousand, because they are worth $5. In 1898 I got for some trees $1.25 per thousand; in 1903 I received $2.50 for the same kind, and last year I found a gentleman who was willing to give me as much as $8 per thousand for them.

THE BENEFITS OF FEDERAL FOREST RESERVES.

Hon. FRANCIS E. WARREN,
United States Senator from Wyoming.

* * * The beneficial object of the withdrawal of the forests of the West from unrestricted public use and their creation into reservations has the indorsement of residents of Western States, even though the public-land area of those States is seriously diminished. The Western people, patriotic in all things, acquiesced in the intrenchment upon their States for the general public good. Although the creation of forest reserves and forestry regulations often works hardship to individuals and to communities, there is no branch of the Government which has more loyal support from Western citizens than has the forestry service. Happily the idea of withdrawing the reserves from all use has year by year lost its potency. Investigation, examination, and experience demonstrated that the reserves could best be preserved by judicious use; and the welcome words of President Roosevelt, in his latest message to Congress, coincide with the views which have been held by many Western citizens since the creation of the reserves, and they illustrate also how closely

and clearly the President is in touch with Western needs and interests. In his message he said:

> It is the cardinal principle of the forest reserve policy of this Administration that the reserves are for use. Whatever interferes with the use of their resources is to be avoided by every possible means.

WILLIAM S. HARVEY,
Delegate from Pennsylvania.

The Appalachian Forest Reservation, the purchase of which has been indorsed and advised by commercial bodies throughout New England and the East, by various forest associations, and by the National Board of Trade, is of vital interest to the whole people. The Southern States have more than 200 millions of dollars invested in cotton mills. These cotton mills are in a large measure dependent upon water power. The taking of the forest cover from the Appalachian Mountains will largely destroy the opportunity which nature has given the South to increase in wealth and prosperity. Upon the continuance of this forest cover depends almost entirely the water power, navigation, and agriculture of the region south of the Ohio and Potomac rivers and east of the Mississippi.

THE FIELD OF THE BUREAU OF FORESTRY.

OVERTON W. PRICE,
Associate Forester, U. S. Department of Agriculture.

The cooperative work of the Bureau began in October, 1898, with the offer of assistance to private owners in the handling of their own lands. From this beginning it has broadened as the direct result of an insistent demand, until it now offers assistance not only in the preparation of working plans, but also in tree planting, either for commercial purposes or for protection, and in discovering the most conservative and profitable methods for the use of the products of the forest. The cooperative State forest studies, which offer a great and increasing field for usefulness, have also grown out of the policy of the Bureau's cooperation with private owners.

Not only has it brought about the use of new and better methods on the ground, but, above and beyond the benefit to the individual cooperator, this work, through the publication of its results, has been a far-reaching influence in furthering that understanding of the purpose and methods of forestry without which its general application is impossible. Thus, the results of the cooperative work can not be measured by the great areas of forest land now under management as the result of working plans prepared by the Bureau, or the 334 plant-

ing plans which the Bureau has prepared for lands in 52 States and Territories.

The area in woodlots and timber tracts in this country is approximately 500 million acres. It is from them that our future timber supply must chiefly come. And the inauguration of better methods in their management is thus a national duty until the private forester is present in sufficient numbers to carry on the work. When that time comes the Bureau will step aside.

GIFFORD PINCHOT,

Forester, U. S. Department of Agriculture.

* * * We recognize that the bulk of our forests are now and must always remain in the hands of private owners; that it is only as the private owner, large or small, becomes interested in forestry and carries out its practical principles, that we shall succeed in introducing forestry into the United States. It should be remembered by every forester, and every man interested in forestry, that the woodlands in farms are about three times as great in extent as all the national forest reserves, and that the reserves are almost insignificant when compared with the vast area of timber land, the millions upon millions of acres, which are owned by lumbermen in larger or smaller holdings, by railroads, or by men of various occupations who control the timber lands upon which the prosperity of this whole country depends. This is to be remembered, that the forests of the private owners will have to be set in order if the overwhelming calamity of a timber famine is to be kept from this nation. The extension of the present forest area, by restocking cut-over lands and by making plantations where there are no forests, is one of the chief duties of the present moment. This will be accomplished by helping the States to formulate their own policies, by active cooperation in studying the local situation in each, and by recommending the best procedure under the conditions that are found to exist. In particular, the farmers in every section of the country must be aided, either to develop their woodlots or to plant trees upon the prairies. The forests now under Government control should remain under Government control so far as they are needed for public uses. We must have forest reserves, and we shall have to extend their area later on, not merely by Presidential proclamation, but by purchase, both East and West. Forest lands are passing out of the Government's ownership every day—lands whose preservation is absolutely essential to the well-being of the country where they lie. It will eventually cost the Government of the United States hundreds of millions of dollars to become possessed again of the areas which it once held, which are now in private ownership, and which are absolutely essential to

the welfare of all of us. I hope to see the Bureau of Forestry act as a helper and assistant, not only to the commercial interests, which is its first duty, but to all the interests of every kind that are in any way connected with the forest. And this not by interference or dictation. **I should like to have every man and every woman in this congress go home with the idea that the Bureau of Forestry is the servant of every one of you, and asks nothing better, and can hope for nothing better, than to be called upon to give you help to the utmost limit of its power.**

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